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To the systematic geologist one of the chief points of interest in the volume lies in the classification of the Cretaceous formations. This is as follows:

- III. The Marl series.
 - 5. Upper marl (in part).
 - 4. Limesand (including the Yellow sand).
 - 3. Middle (Sewell) marl.
 - 2. Red (Red Bank) sand.
 - 1. Lower (Navesink) marl.
- II. Clay Marl series.
 - 5. Wenonah sand.
 - 4. Marshalltown clay-marl.
 - 3. Columbus sand.
 - 2. Woodbury clay.
 - 1. Merchantville clay.
- I. The Raritan clay series.

This subdivision, it is to be noted, is different from that which has been used generally. It is adopted because, in addition to other reasons cited, it is "more accurate" than the classifications heretofore published. The subdivisions of the Clay-Marl series here given were made out by Mr. Knapp some eight or ten years ago. It is to be noted, further, that the difference between this classification and the one heretofore published¹ does not consist merely in the greater number of subdivisions of the several series. The lines of subdivision between the major divisions are not the same as in the earlier classification. Various specific errors in that classification are distinctly pointed out. It may be added that, as a result of recent work done by the State Survey, the subdivisions here proposed have been shown to hold paleontologically as well as stratigraphically, though the results of the recent paleontological studies have not been published.

The press work of the volume is excellent, and the Survey and the state are to be congratulated on the general excellence of the volume as to both substance and form.

J. H. L.

Oil and Gas. Levels. (Vol. IA, West Virginia Geological Survey.)
Pp. xi + 625. I. C. WHITE, State Geologist.

THE earlier volume (Vol. I) of this Survey on Oil and Gas of the State was exhausted some time since, and the present volume is its successor. In the new volume the general discussions of the previous volume

¹ W. B. CLARK, *Annual Report*, Geology of New Jersey, for 1897.

reappear, with some revision, and many new data, gathered since the publication of the earlier volume, are incorporated. The volume is thus brought up to date. Those who had reason to know the value of the first volume will welcome the revision.

The preface also announces a forthcoming volume, to be published probably in 1905, on the clays, limestones, and building-stones of West Virginia, to be prepared by Professor G. P. Grimsley.

R. D. S.

Baraboo Iron-Bearing District. (Bulletin XIII, Wisconsin Geological Survey.) By SAMUEL WEIDMAN, PH.D. Pp. x+190; 23 plates.

THIS volume gives an account of the geology of the region about Baraboo, dealing especially with the pre-Cambrian formations in which the iron ore occurs, and with the iron ore itself. This ore, it may be noted, has but recently been opened up.

The oldest rocks of the region are igneous, and include rhyolite, granite, and diorite. They appear in small isolated areas only. The sedimentary pre-Cambrian formations are three—namely, (1) the Baraboo quartzite, 3,000 to 5,000 feet thick, at the base; (2) the Seeley slate having a probable thickness of 500 feet or more; and (3) the Freedom formation (dolomite and iron-bearing), with a thickness of 400 or 500 feet. The iron ore is in the lower part of the Freedom formation. These formations are regarded as Middle or Upper Huronian. The author's statements on this point are (1) that the Baraboo series is probably the equivalent of the uppermost series of pre-Cambrian sediments in north central Wisconsin (p. 169); and (2) "if the Huronian system, instead of consisting of two series . . . really consists of three unconformable sedimentary series . . . then it seems to the writer that the Baraboo series is, with little doubt, either Middle Huronian or Upper Huronian, and more probably the former than the latter." Exact correlation of the iron-ore bed with the other iron-ore beds of the pre-Cambrian is not attempted.

The ore is associated with ferruginous slate, ferruginous chert, and ferruginous dolomite, and there are gradations from the ore to each of these rocks. The association of the ore with dolomite is believed to be unique among the pre-Cambrian iron districts of the United States. The ore is mainly red hematite, with a small amount of hydrated hematite. It is commonly "more like the hard phases of ore in the old ranges of the Lake Superior district than the soft hydrated ore of the Mesabi district. . . . The ore is usually of Bessemer grade."